Technical Note

Autroprime / VDR

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1. VDR Protocol over RS-422

1.1 Introduction

Autroprime with SW version 2.1.2 has a new operating system which has resulted in a known issue with some of the installed connection on VDR protocol over RS-422. This technical note describes a technical solution on how to solve this issue.

The VDR protocol is transmit only. Previous operating systems had the TX driver always on. However, for the new SW version the Autroprime's serial port driver is set to drive the TX lines only during transmission of messages. Between messages the data lines float; then the receiver in the VDR can pick up a lot of noise. This is a well known property of RS-422 and RS-485 so most boxes have failsafe resistors, also called pull-up and pull-down resistors, that pulls one wire to 5V or 3.3V, depending on system power, and the other to 0V. These resistors shall be placed close to the receiver, in the VDR in our case.

## 1.2 Checking the VDR Lines with a voltmeter

To be certain that a VDR installation will work you can check the VDR lines with a voltmeter.

- The A terminal shall be close to 0V and the B terminal close to 5V (3.3V) when no data is sent. Note that Autroprime is labelled wrong related to the standard, signals J6.4 A (input) and J6.7 X (output) are same polarity corresponding to the standard's B marking. There is great confusion related to A and B markings (or "+" and "-"), so the VDR may well match Autroprime's markings!

- You may also get stable readings around 2.5 V (5V system) or 1,7V (3.3V system) in both lines. It's quite usual to have a line termination resistor; it is placed between the two signal wires and will pull the voltage of the signals together. This situation indicates that the VDR has the required resistors.

- An unstable reading between 0.2-1V on both lines indicates that the wires are floating. This is a situation we do not want, see below.

1.3 Workaround to fix floating wires

- Tell the VDR installer to activate pull-up/down resistors if possible.

- As a workaround for Autroprime Linux, version from 2.1.2. We can "borrow" Autroprime's RX resistors by closing DIP switches S4.1, S4.2 (failsafe resistors) and S4.4, S4.5 (RS-485 mode which connects the TX lines to the RX lines for multidrop operation). (do NOT do this on Integrity versions 1.0 to 2.0.3).

Note: AutroSafe 4 (also Linux) does a similar RS-485 transmission, and we have never had problems with that.
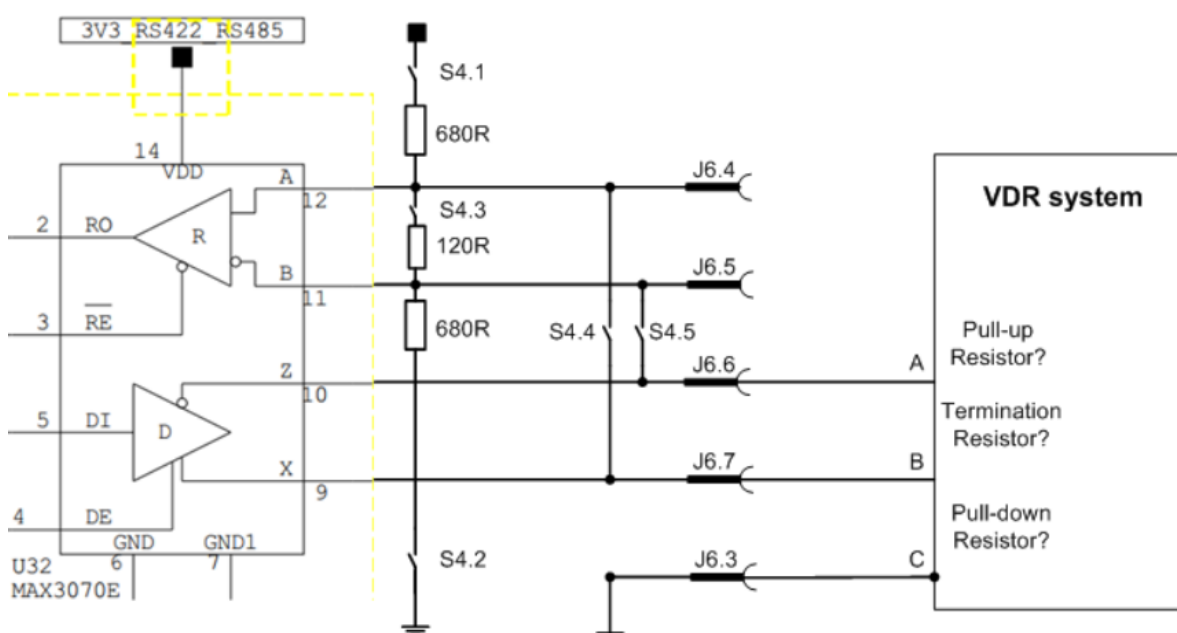
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